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AUTHOR	Blaiwes, Arthur S.; And Others
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ABSTRACT

Computer-based instructional programs in the affective and communication skills areas incorporating some of the results of an earlier research and development project were implemented and evaluated in a Recruit Training Command. The programs involved the use of a stand-alone computer-based system for evaluating and training recruit company commanders and for obtaining information needed for managing Recruit Training Command operations in general. In accomplishing these functions, the computer controlled the operation of a videotape player and a card reader in addition to some more traditional components of a computer-based training system. A new computer language was developed especially for facilitating the transfer of some programs previously prepared in PLATO IV coding to a form compatible with the current computer system. Preliminary efforts to evaluate the feasibility and desirability of these programs indicated that the system can operate as intended in the operational setting and that its acceptance by Recruit Training Command personnel is generally favorable. The results also indicated that the system would entail relatively small expenditures to acquire, operate, and maintain. (Author/CMV)

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TECHNICAL REPORT: NAVTRAEQUIPCEN IH - 300

DEVELOPMENT AND IMPLEMENTATION OF A COMPUTERIZED EVALUATION AND TRAINING SYSTEM (CETS) AT A RECRUIT TRAINING COMMAND

Human Factors Laboratory
Naval Training Equipment Center
Orlando, Florida 32813

and

APPLI-MATION, INC.
930 Woodcock Road, Suite 111
Orlando, Florida 32813

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report documents a one-year effort in which some of the results of an earlier research and development project were prepared for implementation at a Recruit Training Command. This project concerned computer-based instruction for recruit company commanders in the affective and communication skills areas. In an ongoing continuation of this effort, the more complete preparation, implementation, and evaluation of these capabilities are underway.

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Preliminary efforts to evaluate the feasibility and desirability of these programs indicated that the system can operate as intended in the operational setting and that its acceptance by Recruit Training Command personnel is generally favorable. The results also indicated that the system would entail relatively small expenditures to acquire, operate, and maintain.

SUMMARY AND CONCLUSIONS

This report documents a one-year effort in which some of the results of an earlier research and development project were prepared for implementation at a Recruit Training Command. This project concerned computer-based instruction for recruit company commanders in the affective and communication skills areas. In an ongoing continuation of this effort, the more complete preparation, implementation, and evaluation of these capabilities are underway.

The programs involved the use of a stand-alone computer-based system for evaluating and training company commanders and for obtaining information needed for managing Recruit Training Command operations in general. In accomplishing these functions, the computer controlled the operation of a video tape player and a card reader in addition to some more traditional components of a computer-based training system. A new computer language was developed especially for facilitating the transfer of some programs previously prepared in PLATO IV coding to a form compatible with the current computer system.

Preliminary efforts to evaluate the feasibility and desirability of these programs indicated that the system can operate as intended in the operational setting and that its acceptance by Recruit Training Command personnel is generally favorable. The results also indicated that the system would entail relatively small expenditures to acquire, operate, and maintain; especially when one considers the higher costs and lower quality to be expected if these training and management functions were performed by other means. The ultimate desirability of performing these functions by any means is a more complex issue, as it is for almost any of the operations of large organizations such as a Recruit Training Command. The criticality of this issue, however, demands that greater attention be given to its resolution.

The current effort is considered only an introductory demonstration of the types of tasks that can be profitably assigned to a computer at Recruit Training Commands. The cost effectiveness of the system would be expected to increase markedly as other applications are included along with the present one. This report suggests a variety of projects for future research and development that would appear to contribute to the cost-effectiveness of a system similar to the present one.

PREFACE

This project was jointly funded by the Navy Personnel Research and Development Center and the Office of Naval Research. (The Office of Naval Research supported the effort related to the video tape portions of the training materials.) This report documents the development of a computerized evaluation and training system (CETS) for use at the Recruit Training Commands (RTCs); as well as the initial phases of implementing and evaluating this system. The original plan called for a brief (two-month) field evaluation of the system. This has been expanded to extend the evaluation period throughout FY 78. The evaluation will include assessments of the operation, acceptance, usage, and effects of the system at RTC, Orlando. Some of the implementation activities will be conducted by RTC, Orlando with support and evaluation assistance provided by NAVTRAEQUIPCEN.

Many people at RTC, Orlando were very helpful in this effort. Most notably, LCDR William Sullivan, NCI Ginger Simpson, CTRCS Zetterholm, all the division officers who helped in the development and promotion of the system, all the company commanders who participated in the video taping and the company commander students.

The complex and significant tasks of computer systems programming were accomplished by Mr. Marty Smith. The innovative computer programming approaches for the video tape developments were accomplished by Mr. Pat Smith. Mr. Fred Delmos assisted in the preparation of video tape training materials and he and Mr. Pat Smith were responsible for day-to-day operation of the system.

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SECTION I

INTRODUCTION

It is generally recognized that interpersonal communications and relationships are critically important to organizational operations. Still, relatively little assistance seems to be provided toward improving the performance of these activities. In an effort to ameliorate this situation, the possibility that computer technology might be beneficially applied to this area has been investigated.

Thus, the NAVTRAEQUIPCEN has been engaged over the past five years in determining a number of alternative approaches to the use of computers for improving interactions among people and in testing and evaluating several of these approaches in operational settings. The operational settings for these efforts have been Recruit Training Commands (RTCs), and the focus of the efforts within the RTCs has been primarily on training and evaluating interpersonal aspects in the role of the recruit company commander (CC). The earlier programs and evaluations are described in other reports.[1,2,3,4,5]

The current project was directed toward preparing the latest version of these training programs, demonstrated in the first half of 1976, for adoption by the RTC, Orlando. This version of the training consisted of a collection of instructional approaches and materials that, after many iterations, were designed to meet the research and operational requirements and conditions that prevailed at that point in time. Thus, due to time and funding restrictions, many potentially viable components of instruction developed in previous phases of this project were not seriously considered for inclusion.

The current phase of this project continued the effort to comply with research and operational requirements. However, this phase represents the most concerted action to date on this project to prepare a training package for acceptance and adoption by the RTC as a standard component of their operation.

The endeavor to meet RTC requirements involved updating, modifying, and deleting existing training programs and developing new training and evaluation

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1. Spencer, G. J. and Hausser, D. L.; Blaiwes, A. S. and Weller, D. R. Use of Computer-Assisted Instruction for Interpersonal Skill Training - A Pilot Study. 1975. Technical Report: NAVTRAEQUIPCEN 73-C-0133-1.
2. Cohen, J. L. and Fishbein, M. Development and Research Utilizing the PLATO IV System for Company Commander Behavioral Change Training. August 1975. Technical Report: NAVTRAEQUIPCEN 73-C-0129-1.
3. Hausser, D. L., Blaiwes, A. S., Weller, D. R., and Spencer, G. J. Application of Computer-Assisted Instruction to Interpersonal Skill Training. January 1976. Technical Report: NAVTRAEQUIPCEN 74-C-0100-1.
4. Cohen, J. L. and Fishbein, M. A Field Test of the PLATO IV System for Company Commander Behavioral Change Training. July 1976. Technical Report: NAVTRAEQUIPCEN 74-C-0095-1.
5. Lukas, G., Blaiwes, A. S., Weller, D. R. Evaluation of Human Relations Training Programs. January 1977. Technical Report: NAVTRAEQUIPCEN 75-C-0076-1.

programs. In addition, it involved the selection and procurement of an appropriate new computer system which had capabilities similar to but which was more economical than the PLATO IV system[6] used previously.

This report discusses the procedures and results related to this effort to update and extend the earlier versions of the training and to implement and evaluate the new computerized evaluation and training system (CETS) that resulted.

6. Meller, David V. Using PLATO IV. CERL, University of Illinois, Urbana, October 1975.

SECTION II

SYSTEM DEVELOPMENT

It was jointly determined by NAVTRAEQUIPCEN and RTC, Orlando that the computer-based training system should include two major components: (a) Evaluation - a new evaluation program for assessing the background, performance, and perceptions of CCs and recruits, and the relationship of these variables to the operation of the organization; and (b) Training - a training program, made up of both existing and new training materials, which would provide both computer-based instruction and recommendations to correct, by other means (e.g., counseling), weaknesses revealed by the evaluation program.

NAVTRAEQUIPCEN then acquired a computer system capable of handling these two components, with cost-effectiveness the primary consideration. Necessary software systems and evaluation and training materials were developed and implemented.

Procedures for designing and developing the CETS system are described in the following:

EVALUATION PROGRAM

The evaluation program was originally intended to provide information on the performance of CC's and to suggest remedial action where needed. However, it soon became apparent that many other uses could be made of the system, due to the nature and amount of data being collected and the processing power of the computer. Therefore, the evaluation program evolved into a general management tool for RTC in addition to its evaluation role for CCs.

DATA COLLECTION. Data for the evaluation program were collected from a variety of sources, as seen in Table 1. All data were collected near the time of graduation of each recruit training unit at RTC. The Recruit Survey, Division Officer (DO) Evaluation, and CC Survey were developed jointly by RTC and NAVTRAEQUIPCEN personnel.

In the selection of items for these questionnaires, a wide range of relevant areas was considered. A list of tentative items was drawn from several sources including the scientific literature on leadership and performance evaluation, the leadership and evaluation practices of the Navy (especially those of RTC), and results from previous phases of the project. The item lists were organized into categories by sorting the items into homogeneous groups and then defining and titling each group. Items were deleted and added, and groups were redefined to assure maximum coverage and clarity with minimum redundancy. In addition, DOs, division adjutants and CC school personnel assessed the items and categories for their appropriateness, which provided the bases for additional modifications. The list was divided into three survey forms according to who was best qualified, due to his position at RTC, to answer each question -- recruits, DOs, or CCs. The three survey forms appear in Appendix A (category information has been added to these forms for purposes of this report).

The purpose of the Recruit Survey was to measure the CC's behavior in the areas of instruction and interpersonal activities, and to measure the morale and attitudes of recruits.

The purpose of the Division Officer Evaluation was to measure the CC's performance on the job and the training unit's quality.

The purpose of the CC Survey was to provide measures of the CC's opinions and attitudes about various aspects of RTC and his job.

The forms were all answered on optical scanning computer cards, and input to the system for storage and data manipulation through a card reader.

TABLE 1. DATA COLLECTION FOR EVALUATION PROGRAM

DATA	SOURCE	NO. OF ITEMS
1. CC Behaviors	Recruit Survey (filled out by all recruits of a given CC)	36
2. CC Performance	Division Officer Evaluation (filled out by the Division Officer of a given CC)	31
3. CC Perceptions and Background	CC Survey (filled out by the Company Commander)	37
4. Recruit Attitudes (morale)	Recruit Survey	11
5. RTC System Data (includes T.U. background and performance, and some CC background items)	RTC Records	16

DATA PROCESSING AND DISPLAYS. The operation of the evaluation program is diagrammed in Figure 1. Two basic types of data output available were grouped data and individual data. The grouped data option gave the average score of a particular group of CCs (e.g., all CCs in Division 3) on a selected variable, while the individual option gave the score of a single CC on a selected variable.

Displays of data were available at three levels of specificity:

a. Item data involved scores on single items;

b. Category data involved scores on groups of related items (e.g., all items on the Division Officer Evaluation related to "Bearing");

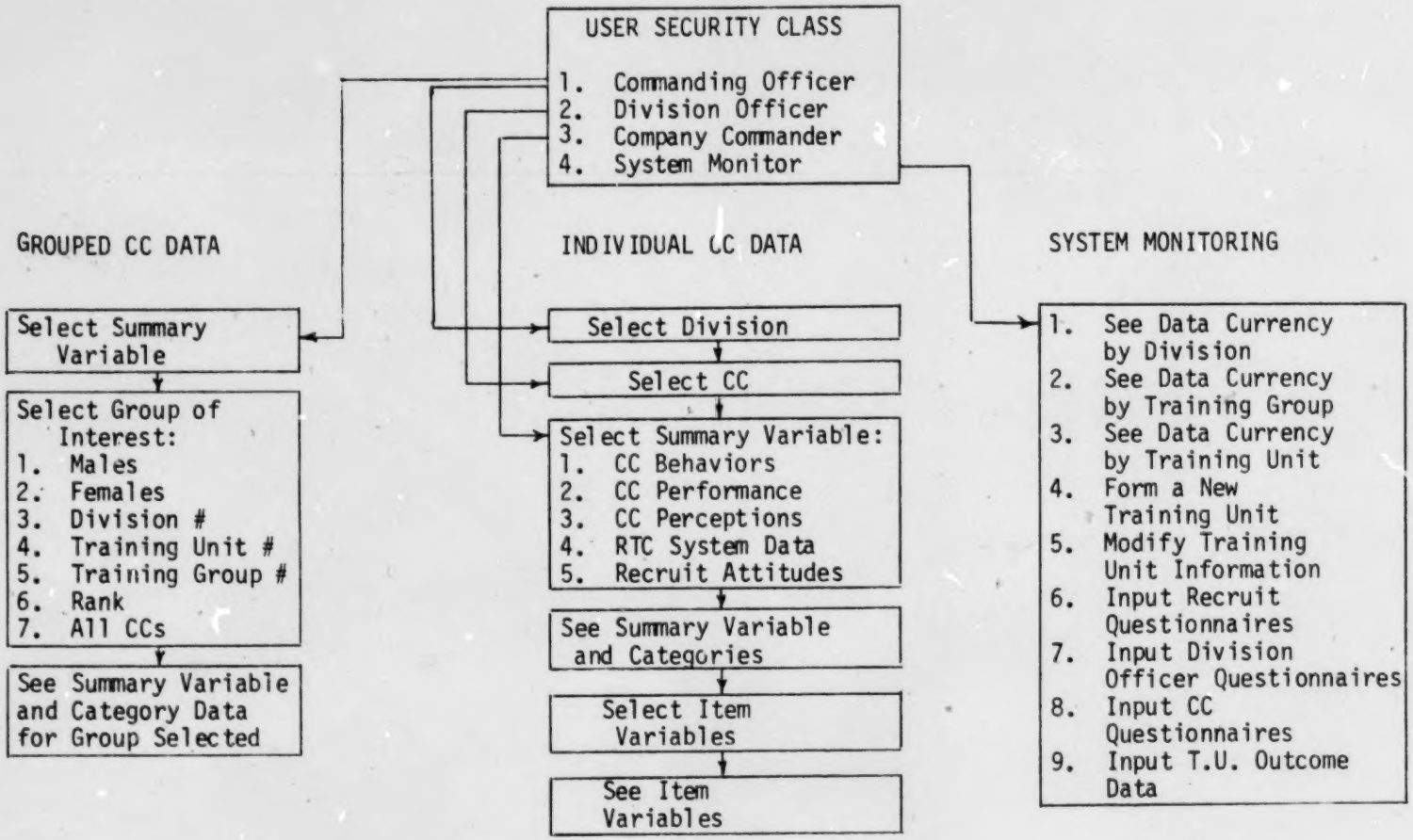

Figure 1. Evaluation Program Flow Diagram

c. Summary data involved total scores from a given source (e.g., total score from Division Officer Evaluation).

As depicted in Figure 1, the amount of data displayed depended on the security class of the user. The Commanding Officer (and other authorized personnel) could see all system data. DOs could see all data on CCs in their divisions. CCs could see all the data which pertained to them. A password security system prevented any user from seeing data which was not within his security class.

The Systems Monitoring component provided the information by which the system operator determined which data needed to be entered into the computer and the means by which the data was entered.

The outputs were presented on the cathode-ray tube (CRT) screen, and, optionally, in hard copy form. All outputs were tailored specifically to the users' needs. To this end, RTC personnel were consulted frequently during the design of the outputs to ensure that they were easily understandable, and in a form most suitable for their intended use.

An example of an individual CC data output is provided in Appendix B. It shows the scores of a given CC on a group of category variables, as well as the average scores of all CCs in the division, all CCs of the same rank, all CCs in the training group, and all CCs at RTC. In addition, percentile scores are given to show how the CC compares with other CCs in his division, other CCs of the same rank, and all CCs at RTC.

This type of output was used to point out the strengths and weaknesses of CCs, so that they might take corrective action on the weak areas. The weak and strong areas are easily determined from the percentile scores.

This output was used by DOs for several purposes including: (a) assisting the DO in counseling CCs; (b) providing inputs to official evaluations; (c) informing the DO of the performance of his division; (d) helping to determine areas of strength and weakness in the division; (e) evaluating the effects of any actions taken by the DO.

This output can be used by the Commanding Officer and other appropriate personnel as a management tool, for use any time detailed data (both absolute and relative scores) concerning any of the variables on the system is required.

An example of a grouped-CC data output is shown in Appendix B, where the average scores on several category variables are given, grouped by division. It is also possible to sort the data by training group, training unit, CC rank, and CC sex. This type of output, available to the Commanding Officer and other authorized personnel, provides a management aid which is useful any time it is desired to compare the performance of various groups of CCs.

In summary, the evaluation program is designed to give information to the Commanding Officer, DOs, CCs, and other personnel (e.g., Code 40 staff, CC school personnel) on the performance of CCs and RTC in general, and to evaluate the effects of any changes in RTC operations.

The evaluation program has some similarity to the RATES (Rapid Access Training Evaluation System[7]) program once used at RTC. The RATES system also used a computer to process attitudinal data. RATES, however, utilized only fairly raw measures of student attitude as evaluation criteria, whereas CETS goes beyond this to provide highly-processed attitudinal data from a variety of sources. In addition, CETS relates a wealth of potential evaluation criteria, also in a highly-interpretable form, from a variety of other sources (e.g., the organizational performance measures, the performance ratings, the demographic data). Thus, the CETS evaluation program is similar to RATES in that CETS includes many of RATES features; however, CETS is broader than RATES in both the extensiveness of its capabilities and the range of its application.

CONTRIBUTIONS OF THE COMPUTER. A computer is essential to the operation of an evaluation system such as this since it can: (a) input and store very large quantities of information; (b) rapidly perform complex calculations and manipulations on this information; and (c) quickly provide displays and outputs which present the processed information in the most usable form.

TRAINING PROGRAM

LESSONS PRESENTED ON COMPUTER TERMINAL. During previous phases of this project, training materials utilizing computer-assisted instruction were developed under four approaches. These were: (1) the skill training approach,[8] (2) the behavior training approach,[9] (3) the evaluation approach,[10] and (4) the case study approach.[11] Of these, only the first was considered acceptable for operational use at RTC at this time. The decision to exclude the other three approaches was based on several considerations. The skill training program was the most complete, having been under development throughout the history of the project. It was also the approach which had the most substantial and favorable evaluation results. Resource limitations did not permit the implementation of the other three approaches although they still have good promise for application, given the time and resources necessary to develop them further.

Some modifications were made in the skill training programs as they were transferred to CETS. These modifications were primarily in two areas. The programs were made applicable to female CCs (they had been developed for males), and the new RTC terminology and practices were incorporated (e.g., "Battalion Commander" became "Division Officer").

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7. Human Resource Management Project Final Report. June 30, 1976, S.F. and G. dba Mercury, San Diego, Calif, Contract N-00123-C-0191 (unpublished report).
8. See footnotes 1 and 3 on page 5.
9. See footnotes 2 and 4 on page 5.
10. See footnotes 2 and 4 on page 5.
11. See footnote 5 on page 5.

The operation of this portion of the training program is shown in Figure 2 (blocks 1 through 10). After receiving an introduction to the system, the student was given instruction on the "Three Keys" (Goal Setting, Instruction, and Feedback), followed by lessons on each of the "Seven Skills." A portion of the material from the lesson "Concrete" is included in Appendix C. These materials are more fully described in previous reports (see footnotes 1, 3 and 5).

Contributions of the Computer. The contributions of a computer to a training program such as this include all of those usually associated with computer-assisted instruction, viz., improved self-pacing of students and individualization of instruction; and automatic remediation, testing, data keeping, etc. In addition, computer-assisted instruction provides an added benefit in the area of interpersonal skills training, in that the absence of human evaluators during training provides a relatively nonthreatening atmosphere. This is not true of some other methods of instruction in this area, such as role-playing.

LESSONS UTILIZING VIDEO TAPE. The new training material developed during this phase involved computer-controlled video-tape presentations of CCs and recruits. These lessons were intended to provide more real-to-life representations of the CC's job for training and testing purposes. Video tape was expected to be an efficient means of increasing student interest in the training as well as transfer from training to the job itself.

These benefits were expected to result from an increase in the student's belief that the skills being taught actually are effective with recruits. The credibility of the instruction should increase because the student can see the program skills being performed well and poorly by actual CCs in job situations wherein the apparent effects on recruits correspond with the quality of performance (i.e., the recruits respond well to the good performance and less well to the poor performance). The video tapes also were expected to help reduce ambiguity in the instructional concepts by providing concrete examples of their implementation.

Shadowing. An alternate method of achieving these benefits is practiced at RTCs in the form of "shadowing." Here, the student observes one or more CCs performing normal job activities. Whereas shadowing is important for getting a general impression of the job, the video tape lessons supplement the shadowing experience in the following ways:

a. Variety - The student can be shown a greater number and variety of situations and approaches for dealing with them on video tape than would be practical with shadowing;

b. Interpretation - The lessons-to-be-learned are indicated in the video tape programs, whereas in shadowing they are generally left to the student's self-instructional abilities;

c. Permanency - Video tape lessons can be used long after the CCs appearing in them have left RTC. A CC can only be shadowed, of course, while he remains at RTC;

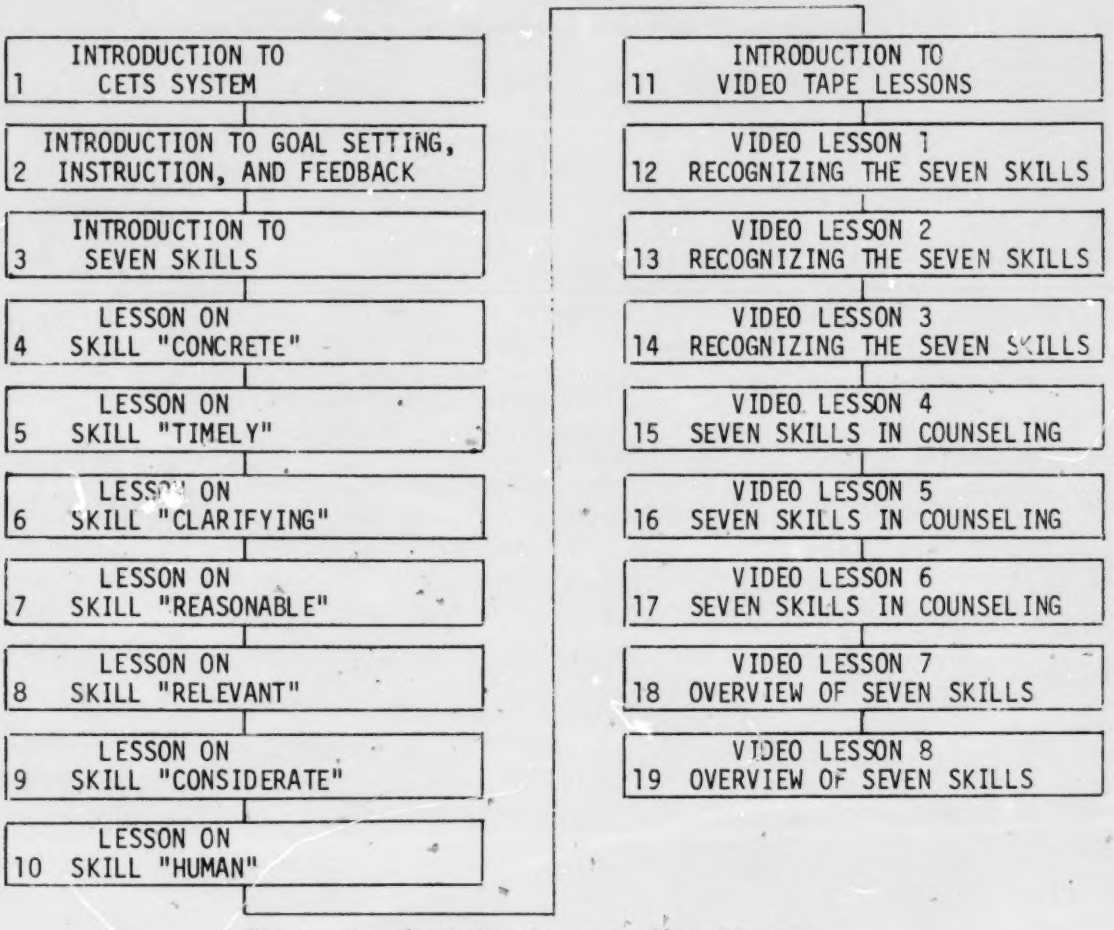
1 INTRODUCTION TO CETS SYSTEM
2 INTRODUCTION TO GOAL SETTING, INSTRUCTION, AND FEEDBACK
3 INTRODUCTION TO SEVEN SKILLS
4 LESSON ON SKILL "CONCRETE"
5 LESSON ON SKILL "TIMELY"
6 LESSON ON SKILL "CLARIFYING"
7 LESSON ON SKILL "REASONABLE"
8 LESSON ON SKILL "RELEVANT"
9 LESSON ON SKILL "CONSIDERATE"
10 LESSON ON SKILL "HUMAN"
11 INTRODUCTION TO VIDEO TAPE LESSONS
12 VIDEO LESSON 1 RECOGNIZING THE SEVEN SKILLS
13 VIDEO LESSON 2 RECOGNIZING THE SEVEN SKILLS
14 VIDEO LESSON 3 RECOGNIZING THE SEVEN SKILLS
15 VIDEO LESSON 4 SEVEN SKILLS IN COUNSELING
16 VIDEO LESSON 5 SEVEN SKILLS IN COUNSELING
17 VIDEO LESSON 6 SEVEN SKILLS IN COUNSELING
18 VIDEO LESSON 7 OVERVIEW OF SEVEN SKILLS
19 VIDEO LESSON 8 OVERVIEW OF SEVEN SKILLS

Figure 2. Training Program Flow Diagram

d. Standardization - With video tape, each student is assured of experiencing the subject matter considered most critical, whereas in shadowing the criticality of the subject matter is left to chance;

e. Review - Students can see critical video tape instruction again and again, whereas in shadowing the lesson is often gone before the student is ready to start learning;

f. Improvement - With the video tape programs, the instruction can continually be updated and improved, whereas the instructional quality in shadowing varies fairly randomly over time, depending on the quality of the CCs being shadowed;

g. Efficiency - The video tape lessons "compress" the shadowing experience by editing out nonsignificant events and idle time, thus saving student time.

Content of Video Tapes. As shown in Figure 2, there were eight video tape lessons. Each lesson involved several segments of video tape training

material (from three to eight). The duration of the segments varied from a few seconds to over a minute. The content of the tapes was varied by showing several different CCs in a number of different situations. These situations involved common activities such as: instruction (on marching, academic subjects, locker stowage, etc.); holding individual and group counseling and feedback sessions; and distributing proficiency awards.

Further variation in the content of the video tape materials was achieved by addressing both positive and negative aspects of a CC's performance. For example, two vignettes were enacted to emphasize two general types of commonly observed inadequacies among CCs. One type of general inadequacy was called "wishy washy" because the CC was very attentive to the emotions and morale of the recruit, but not very directive. The other enacted vignette showed a "tough guy" type of deficiency which was just the reverse of "wishy washy" (very directive, but ignoring emotional aspects). All of the other vignettes were abstracted from video tapes depicting naturally occurring, on-the-job encounters between CCs and recruits. CCs were selected for taping by the RTC if their schedule included important interactions with recruits during the taping period. After some initial nervousness, most CCs appeared to feel fairly comfortable in the taping situation. Some video tapes were taken from about 30 yards away from the subjects (with the aid of a wireless microphone and telephoto lens) which seemed to help decrease the obtrusiveness of the video taping activities and thereby the discomfort of the participants.

Operation of Video Tape Lessons. As shown in Figure 2, the video tape materials were presented to the students as the final portion of the training program. The textual portion of each lesson appeared on the graphics terminal, while the video portion appeared on an adjacent TV monitor.

The computer automatically controlled all functions of the tape player, freeing the student to attend to the training material. Introductory material for each tape segment appeared on the graphics terminal. This was followed by presentation of the tape segment on the video monitor which, in turn was followed by questions on the terminal. After each segment, the student had the option of answering the questions or re-viewing the tape segment first. In some cases, a wrong answer to a question would result in the tape segment being reshown automatically. In many instances, the questions following a segment would progress from very general to quite specific; first asking the student to identify general skill areas being displayed, then asking for identification of specific behaviors which occurred within the skill areas.

Contributions of the Computer. This marriage between the computer and the video tape represents an advancement to the state-of-the-art in using video tapes for instruction in the interpersonal skills area, as well as for instruction in general.

Video taped presentations of job performance have been successfully utilized for training purposes for many years. The application of video tape

techniques to interpersonal skill instruction has included areas such as guidance and counseling,[12,13,14] psychiatric therapy,[15] classroom instruction,[16] group problem solving,[17] and job interview training.[18]

The instructional strategies employed in these efforts have ranged from merely showing a continuous video tape to the student with little or no orienting instructions to interactive sessions wherein an instructor interprets and discusses the action on the video tape with the student. The interactive strategies provide greater assurance that the student understands the lessons contained in the video tape. However, this approach is limited by the ability of the instructor, and it requires a considerable investment of instructor time. The present application has the advantages of the interactive strategies without the limitations in that the computer directs the student's attention to critical aspects of the video tape and elicits, evaluates, and corrects his reactions to these stimuli. A further advantage of a computer-controlled video tape system is that it can locate the desired sections of tape much more accurately and rapidly than a human operator, thus avoiding undesirable breaks in the continuity of the lessons.

COMPUTER SYSTEM

HARDWARE. The training programs described in the previous section were previously implemented on the PLATO IV computer system. It was decided to transfer this training material to a new stand-alone, mini-computer based system. The requirements for this new system were developed with the following factors in mind:

a. Ability to execute all previously developed training material.

12. Kagan, N. Can Technology Help Us Toward Reliability in Influencing Human Interaction? Educational Technology, February 1973, 44-51.
13. Tarrier, R. New Trends in Technology Management for Training Group Counselors. Educational Technology, February 1973, 52-56.
14. Cohn, B. Absentee-Cueing: A Technical Innovation in the Training of Group Counselors. Educational Technology, February 1973, 61-62.
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16. Rutherford, R. The Effects of a Model Video tape and Feedback Video Tapes on the Teaching Styles of Teachers in Training. Journal of Experimental Education, Vol. 42, No. 1, Fall, 1973, 64-69.
17. Walter, G. Acted Versus Natural Models for Performance-Oriented Behavior Change in Task Groups. Journal of Applied Psychology, 1975, Vol. 60, No. 3, 303-307.
18. Venardos, M. G. and Harris, M. B. Job Interview Training with Rehabilitation Clients: A Comparison of Videotape and Role Playing Procedures. Journal of Applied Psychology, 1973, Vol. 58, No. 3, 365-367.

b. Ability to execute all proposed training material; especially the CC evaluation program and the video tape training materials.

c. Cost.

d. Delivery schedule.

e. System Software capabilities.

f. Programming languages available.

g. Compatibility with other NAVTRAEQUIPCEN computer equipment.

h. Maintenance availability.

i. Reliability.

j. Availability on GSA schedule.

k. Expandability.

The system selected was centered around a Data General NOVA-3 mini-computer. The primary factors influencing the choice were delivery schedule and compatibility with other NAVTRAEQUIPCEN equipment. The presence of other NOVA computers at NAVTRAEQUIPCEN made possible the programming of much of the material prior to the delivery of the actual system, since transfer of programs between NOVA computers is relatively easy.

Principal components of the system are:

a. NOVA 3/12 CPU with 32K of MOS memory.

b. Data General 10 mega-byte cartridge disc system.

c. Data General 60 cps printer/terminal.

d. Tektronix CRT graphics terminal.

e. Data General mark sense optical card reader.

f. Sony VO-2600 video-tape recorder with interface to NOVA.

The hardware system configuration is shown graphically in Figure 3.

The total cost of this system was approximately $35,000, and maintenance costs are approximately $5,000 per year.

SOFTWARE. The software for the CETS system can be categorized into three areas: (1) lessons presented on the terminal; (2) lessons using video tape;

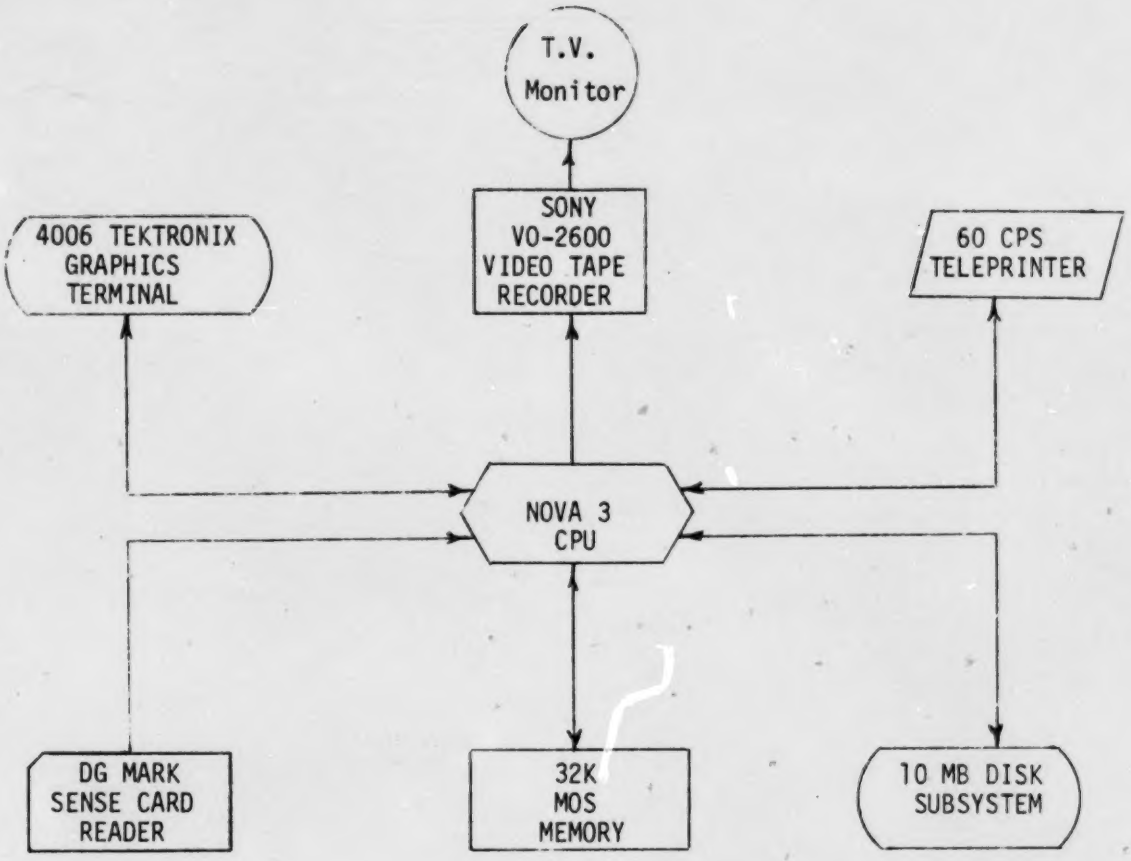

Figure 3. Hardware Configuration

and (3) the evaluation program. A detailed description of the software can be found in another report.[19]

Lessons Presented on the Terminal. These lessons had previously been implemented on the PLATO IV system. It was necessary to translate them to a form compatible with the new system. For this purpose, a major effort was invested in developing a new programming language for the new system very similar to the TUTOR language used on PLATO IV. This made the translation process relatively easy in that much of the old TUTOR code could be typed directly into the new system. Also, some of the important characteristics of the TUTOR language were retained, the primary one being programming simplicity. It is relatively easy for a non-programmer to learn the language in a short time.

After a program was written in this new language, it was then put through a translation program. This program translated the code from the new language into Fortran and Assembler routines which the computer then compiled and executed. With minor exceptions, the programs operated as they did on the PLATO IV system.

Lessons Using Video Tape. These lessons were also written in the new language. However, they included special commands for the operation of the video tape player. The computer was able to control all functions of the tape player (play, record, fast forward, rewind, stop, pause) through an interface which also was designed especially for use in this project. Timing was used to locate specific points on the tape. For example, if the next segment to be played was farther along on the tape, the computer would activate "fast forward" for the required number of seconds, then "stop"; then "play" for the required number of seconds. To find a segment earlier in the tape, "rewind" would be activated for the appropriate time.

Evaluation Program. Software for the evaluation program consisted of programs to input, store, manipulate, and display the large amounts of data which were involved in the system. Data were input through the terminal keyboard and the card reader. All data were sorted by training unit number and stored on disk. Statistics were calculated on all data, including means, standard deviations, z-scores, and percentile scores. These statistics were used in the creation of the displays, as shown in Appendix B. As shown in these displays, it was possible to group the data in many ways (by rank, by division, by training group, etc.). Each of these displays could be output on either the CRT terminal or the printer.

19. Appli-Mation Inc. Program Description Document for the Computerized Evaluation and Training System. October 1977.

SECTION III

SYSTEM IMPLEMENTATION AND EVALUATION

In addition to assuring that an appropriate evaluation and training system is developed, it is critical to the success of the project that the new programs be properly integrated into the ongoing operations at RTC; that they be appropriately utilized by RTC personnel; and that an assessment be made of the contribution of this program to the RTC operation.

INTEGRATION INTO RTC

The integration of CETS into RTC was facilitated by maintaining a continual liaison between the users at RTC and the Research and Development (R&D) team at NAVTRAEQUIPCEN during the developmental period and by commencing the transfer of control of the new training to RTC personnel. The RTC's ability to operate the system is being facilitated by a system operator's manual which outlines operational procedures and by the computer programs which were designed to facilitate the interaction between the human users and the computer-based system. The computer programs assist the integration process in that most aspects of the training and evaluation programs operate automatically, thus eliminating the need for major deviations from ongoing routines of RTC personnel. The operation of the system requires a monitor to be available to assist in case of an occasional system malfunction, but routine operating procedures require only about 10 man-hours per week. It should be noted that these 10 man-hours are not all added effort, in that these routine procedures include several tasks which were performed by RTC before the introduction of CETS.

The transfer in system operations has been occurring over a six-month period which initiated with demonstrations of the system and is continuing with the actual operation of aspects of the system by RTC personnel with NAVTRAEQUIPCEN support as required.

Some problems were encountered in connection with this integration process. Many of these problems are attributable to the rapid transition of CETS from research and development stages to an operational system. For example, hardware and software malfunctions which were due mainly to the early development stage of the system caused some delays in the training of CCs and in the processing of needed data, and this created problems for the RTC staff. However, the system has become more stable over time, and such problems are becoming more infrequent.

Another area of difficulty involved the acceptance of CETS by RTC personnel. It took time for word of its purposes and capabilities to spread throughout RTC. Since it is a radically new means of training and evaluating CCs, many mistaken ideas about the system arose, especially among CCs themselves. These mistaken ideas were combated with numerous briefings and memoranda from NAVTRAEQUIPCEN and RTC personnel. The use of the system by CCs has increased from almost nil at the beginning of the project to about 50% of available CCs at the present time, and it shows promise of continued improvement. Although progress toward CC acceptance appears to be advancing well, this area will require constant vigilance and nurturing, especially

until the system loses its experimental status and becomes an integral part of RTC.

Acceptance of CETS by other RTC personnel was predicated on somewhat different considerations than for CCs. One area of concern for these personnel was the lack of concrete evidence that the current configuration of programs, in the form of CETS, was having a positive effect on the organization. The provision of such evidence is a time-consuming process. It involves training or evaluating a large number of CCs, waiting until they have picked up and led subsequent companies, and then evaluating them again. Following this, the data must be analyzed to determine where changes in performance have occurred. This process takes several months, and the first complete data are just now being collected. Some of the necessary evidence concerning the effects of CETS will soon be available.

UTILIZATION AT RTC

The training portion of CETS was used by RTC on a routine scheduled basis to train prospective CCs, i.e., those who had just completed the standard CC school (a four-week program of lecture-oriented classes). Following the computer-assisted training, the CC students entered a period of shadowing. After a few weeks of shadowing, they were given their first training unit (T.U.) to lead. This involved preparing 70-80 recruits, in an eight-week period, to be capable of assuming life in the Navy.

The evaluation portion of the system came into play at the end of the training period, when all inputs (Table 1) were collected and processed. Each CC was encouraged to come to the computer and look at his/her data, in order to become aware of his/her weak and strong points. RTC and NAVTRAEQUIPCEN personnel were present to instruct CCs in use of the evaluation system, and to suggest steps which the CCs might take to improve their performance.

In addition to the mainly scheduled utilization by new CCs, the system was also used by other RTC personnel in a variety of ways. For example:

a. Experienced CCs looked at data from their training units to determine their strong and weak points.

b. Data from the system have been used by CC school personnel to assist in the counseling of CCs.

c. The Director of the Standards and Evaluations Department has made extensive use of data outputs to investigate questions such as:

(1) how do variables such as age, rank, rate, etc. relate to CC performance?

(2) what variables determine a CC's attitude toward CC school?

(3) what variables are related to the differences in the performance of the various divisions?

d. The CETS data has been used to help select the "Sailor of the Month."

ASSESSMENT AT RTC

The CETS system was evaluated, in a preliminary analysis, from several points of view during the period of transfer of control from NAVTRAEQUIPCEN to RTC. Results from this evaluation are categorized as follows:

a. Attitudes of the RTC staff (CCs, DOs, CC school personnel, and others who used the system) toward the system.

b. Amounts of use made of the various components of the system.

c. Cost savings resulting from use of the system.

ATTITUDES OF RTC STAFF. The majority of the attitude data came from student CCs who went through the training portion of the system. A total of 18 student CCs have completed the training to date. Each student was given two attitude forms during training; one after the training materials which appeared on the terminal, and one after the video tape training. The questions and results are shown in Table 2.

Table 2 shows that, on Form I, the students considered the instruction to be interesting (#1) and useful to them (#2). There was a tendency to say that, as a result of the instruction, they were more able (#3) and more likely (#4) to perform the skills that were taught. They also thought that RTC would be improved if more of its personnel used the skills (#5).

Form II shows that the video-tape materials improved the responses on four of the five items, although none of the differences was statistically significant. Also, the results on items 6 and 7 show that the video tape programs increased the enjoyment and perceived effectiveness of the training beyond that of the printed material alone. Across both forms, 76% of the responses were favorable, 3% unfavorable, and 21% neutral.

Much improved picture and sound quality are possible in the video tape materials, and some criticism from students and other RTC personnel was directed at these elements. It is encouraging to note, however, that the advantages of the video tape approach were sufficiently impressive so as to elicit favorable overall attitudes in spite of these technical shortcomings. Further, most of the taping problems were due to the inexperience of the researchers in video taping techniques. The preparation of good quality sound and video should be much less a problem now that such experience has been attained.

No formal measures were taken of attitudes of others on the RTC staff. However, judging from the extensive utilization by non-CC personnel (see next section), it can be assumed that the system was perceived as a useful tool.

AMOUNT OF USE. The computer kept track of the amount of time that the system was used by various categories of personnel. Also, detailed use data was kept on the student CCs. They were scheduled to use the system for two hours per day each until they completed the training. They took an average of 6.01 hours to complete the training (range 4.07 to 7.87).

TABLE 2. CC STUDENT ATTITUDES

ITEM	FORM I MEAN	FORM II MEAN	DIFFERENCE (II-I)
1. The recent experience with the CETS program was: (5 = fascinating, 3 = neither liked nor disliked, 1 = a bore)	3.94	3.88	-.06
2. The recent experience with the CETS program is: (5 = very useful, 3 = neither useful nor useless, 1 = useless)	4.12	4.31	+.19
3. I think that I am more able to perform the skills of the CETS program as a result of my recent experiences with the program. (5 = strongly agree, 3 = unsure, 1 = strongly disagree)	3.44	3.81	+.37
4. I think that I am now more likely to actually use the skills of the CETS program as a result of my recent experiences with the program. (5 = strongly agree, 3 = unsure, 1 = strongly disagree)	3.50	3.75	+.25
5. RTC would be more effective if more of its personnel would use the skills taught in the CETS training program. (5 = strongly agree, 3 = unsure, 1 = strongly disagree)	3.94	4.06	+.12
6. Without the video-tape materials, the CETS program would have been less enjoyable. (5 = strongly agree, 3 = unsure, 1 = strongly disagree)	NA*	4.25	NA*
7. Without the video-tape materials, the CETS program would have been less effective. (5 = strongly agree, 3 = unsure, 1 = strongly disagree)	NA*	4.19	NA*

* Not Applicable

A total of 36 experienced CCs used the system for an average of 22 minutes each, primarily to look at their evaluation data. Most of this use occurred in the last couple of weeks of the three-month period of operational application. Usage by other RTC staff members is difficult to categorize accurately. This is because a request for data would often come from one person, but another person would sign on the computer to output the data. For example, much of the computer time charged to NAVTRAEQUIPCEN staff members was actually used to fill requests by RTC personnel for data.

However, an overall estimate of the time that the system was in use by (or for) RTC staff personnel other than CCs is 130 hours and this too is increasing

at an accelerated rate. Personnel using the system included the Commanding Officer, Military Training Officer, Director of Standards and Evaluations, division officers, and CC school personnel.

COST SAVINGS RESULTING FROM USE OF SYSTEM. The best indicators of the cost-effectiveness of the CETS system appear to involve the post-RTC performance of recruits and the speed of their progress through RTC. Except for attrition rates and to some extent perhaps recruit competition scores, such measures generally are not available. Many of the variables that can be related to the ultimate cost-effectiveness of a program at RTC either are almost inextricably enmeshed in the complexities of the Navy system or have a somewhat questionable connection to fiscal considerations.

Examples of some cost-related variables at RTC that are difficult to measure due to system complexities are the time saved and the problems solved due to the availability of data from the evaluation programs. To determine the nature of such effects, one would need to know what data were used from the CETS system, how much resources would have been required to get these data by other means, what actions were made possible by virtue of the availability of the data, and what would have been the consequences of not taking these actions. It appears that valid information of these kinds would be difficult to obtain. However, an evaluation effort in this direction will be made in the ongoing evaluation of CETS.

The attitudes, morale, and motivations of RTC personnel are also difficult to measure accurately and there is, additionally, a less clear-cut relationship between these measures and cost considerations. In some of the earlier referenced reports on this project (Spencer, et. al., 975, Hausser, et. al., 1976, Lukas, et. al., 1977), it was noted that the recruits of better CCs (i.e., those who were rated higher by their supervisors; who had companies with higher competition scores and lower attrition; and who performed at higher skill levels as judged by their recruits) were significantly more likely to report favorable attitudes, morale, and motivations than those of lower-rated CCs. These findings support the notion that these affective measures are indeed measures of recruit quality. Thus, in the absence of some of the more direct cost-effectiveness measures, affective data can contribute to the picture of RTC operations from which cost effectiveness can be inferred. Sufficient affective data are not yet available to support an inference about the present cost effects of CETS. Based on findings from the earlier research on this project, however, it is expected that such effects due to CETS will be positive.

Tangible evidence of cost-savings is obtainable where CETS is substituted for a less efficient manner of performing a job. If the tasks performed by CETS were to be attempted manually, many times the resources would be required to provide services that would only be poor approximations to the accuracy, comprehensiveness, and speed of the CETS system. Unfortunately, however, most of the tasks performed by CETS either were not performed previously at RTC or a substitution approach to its evaluation was not employed.

One area where CETS was substituted for a previous procedure, however, is that of the processing of "recruit critique sheets." Performed manually, this operation required about six hours a week to process about 1/5 the data as is

now being processed automatically by CETS. Thus, CETS is providing more substantial information in seconds vice hours. Continuing attention will be given to other opportunities at RTC to replace a less efficient operation with the automatic capabilities of CETS.

A prime example of this is the potential of replacing some portions of the regular CC training program. The costs of the time that instructors normally invest into the teaching taken over by CETS could be deducted from the costs of CETS, thusly further contributing to its cost-effectiveness.

The pursuit of cost-effectiveness evaluations typically is considered unwieldly if not impractical for areas such as the present one (involving leadership, interpersonal communications, etc.). However, the criticality of the findings and the potential for contributions to a general methodology for conducting such investigations require continued efforts in this direction.

SECTION IV

CURRENT ACTIVITIES AND FUTURE PROPOSALS

Ongoing activities consist of completing the development of the evaluation program; continuing the testing, refinement, and further development of the training programs; and initiating the evaluation of the total system.

EVALUATION PROGRAM

Plans for FY 78 efforts at extending the evaluation program include:

a. Addition of a remediation feature to the CC outputs which will suggest actions to be taken to correct any deficiencies uncovered by the evaluation (i.e., going through portions of the skills training programs, counseling with the DO, etc.).

b. A computer-based procedure for weighting and combining various evaluation variables for obtaining global (and perhaps official) evaluations of CC performance.

c. Revalidation of evaluation variables.

d. Statistical tests (e.g., t-statistics, correlations, regression analysis, analysis of variance) to determine the statistical significance of relationships among variables.

e. Graphical displays of relationships among variables.

f. Displays which compare existing groups (e.g., divisions, ranks, male/female) on their scores for all variables.

g. Automatic printouts of messages to personnel requesting updating of data for the evaluation program.

h. Scheduling of official MED inspections.

TRAINING PROGRAMS

Further development of the training programs will include:

a. Continuing refinement of existing programs based on data from current users.

b. Improvement of sound quality and computer control of existing video tapes.

c. Development of a program in which the computer assists judges to evaluate video taped performances and to provide performance feedback to the people who are the subjects of the video tapes.

SYSTEM EVALUATION

Current procedures for evaluating the CETS system involve determining who uses the various components of the system, how they use it, their attitudes toward it, and the impact of the system on the behavior and performance of recruits and CCs, and on organizational effectiveness.

FUTURE PROPOSALS

Proposals for the further use and expansion of the CETS system will be based on feasibility and cost-effectiveness estimates of such applications as:

a. Scoring and summarizing recruit test performances and incorporating these data into the current evaluation program for further processing and analysis (as is done with the current variables).

b. Collecting and analyzing data on prospective CC school candidates for the purpose of tailoring CC training to the individual.

c. Collecting and analyzing fleet data on the performance of recruits after they leave RTC as an additional source of management information.

d. Computer administration of major portions of the CC training program as currently conducted at RTC.

e. Implementing an in-depth program for assisting RTC personnel in the proper interpretation and utilization of data from the evaluation program.

f. Collecting and analyzing data related to other variables or positions at RTC, and administration of similar training to other positions at RTC (e.g., classroom instructors).

g. Employing the video-tape capabilities for providing feedback to CCs on their own on-the-job performances.

h. Creating video-tape instruction for administration to large groups of students.

i. Applying the computer system to the management of instruction for recruits (thusly allowing each to progress at his own pace through some parts of RTC).

j. Giving recruits brief exposure to CAI (to prepare them for the type of training many of them will receive after RTC).

k. Performing many of the training analysis functions of the data analysis department at RTC.

SECTION V

DISCUSSION

This project demonstrates some rather novel capabilities and applications of an instruction-oriented, computer-based system at an RTC. It also demonstrates some atypical approaches to training, evaluation, and management in the interpersonal-communication area. The demonstration is considered introductory because the system can do much more at relatively little additional cost; thus increasing its cost effectiveness. It is introductory also because, as for any new approach, continual evaluation and refinement is required to assure maximal exploitation of existing capabilities. The arguments for the use of the system as is and for expanding its use further are based on the benefits already achieved and on those expected from future efforts.

The expected future benefits were addressed in Section IV of this report. The benefits already achieved include results obtained from the three previous evaluations of materials related to this project as well as the findings of the current evaluation. The previous research (which was identical in many aspects to the present research) has found the following effects due to the training program: (1) improved behaviors in CCs; (2) improved attitudes in recruits; (3) some evidence of improved performance in recruits.

The current research provided some critical data on the operability and acceptability of the present version of the computer-based programs for training, evaluation, and management functions at RTC. First, the favorable attitudes of the students (Section III) provided evidence for the acceptability and face validity of the instructional components. Second, the data concerning the use of the evaluation program indicated that this component of the system is well on its way to fulfilling its intended functions. This feature was intended to be used as a management tool for diagnosing problem areas prior to action; as a basis for determining action; and in evaluating the effects of actions after they are implemented. Although RTC is just becoming familiar with this capability and much of the data base still needs to be acquired for some operations, the evaluation system has already been used extensively for a variety of purposes (Section III).

In addition to being effective, the programs are efficient, due mainly to the computer. The computer plays a central and critical role in all phases of the current system, as was explained in Section II ("contributions of the computer"). Some of the expected cost benefits or those already noted or inferred have been described in Section III. Thus, considering the benefits already apparent, the costs of operating and maintaining the system (detailed in Section II) appear to be justified. The justification for a system such as this becomes even more compelling when one considers the potential benefits to be derived from additional applications of the system. These additional applications would be relatively easy to accomplish now that the basic system is operational.

APPENDIX A

DATA COLLECTION SYSTEM

RECRUIT SURVEY

The following pages contain questions about you, your CC, and the Navy in general. Answer each question by making a mark on the NAVTRAEQUIPCEN answer form which you have been given. Mark the form as follows:

A if you strongly agree with the statement.
B if you agree with the statement.
C if you neither agree nor disagree with the statement.
D if you disagree with the statement.
E if you strongly disagree with the statement.

Example: If question 1 said "Florida is hot in the summer" and you strongly agree with this, you would make a mark in the A column after number 1.

	A	B	C	D	E
1.	▬	=	=	=	=

Make your marks with a black pencil. Do not put your name on the answer form, but do fill in your company number and day of training. Your company commander will not know how you answered. He or she will only see the average answers given by the entire company.

A. GENERAL	B. 3 KEYS	C. 7 SKILLS
1. COUNSELING	1. GOAL SETTING	1. CONCRETE
2. MOTIVATING	2. INSTRUCTION	2. TIMELY
3. INSTRUCTING	3. FEEDBACK	3. CLARIFYING
4. RESPECT FOR CC		4. REASONABLE
5. GENERAL MORALE		5. RELEVANT
6. LIKING FOR BOOTCAMP		6. CONSIDERATE
7. ESPRIT DE CORPS		7. HUMAN
8. INTENTION TO RE-ENLIST		
9. EXPECTED LIKING OF NAVY		
10. VALUE OF TRAINING		
11. REWARD & PUNISHMENT		

Figure A-1. Recruit Survey

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

Goal Setting	1.	My CC tells us what goals we are supposed to reach.
Instruction	2.	My CC gives us instructions which are complete.
Feedback	3.	My CC gives us enough information on how well we are doing.
Concrete	4.	My CC gives very specific details when explaining something.
	5.	My CC demonstrates things to us to help us learn.
Timely	6.	My CC gets our full attention when talking to us.
	7.	My CC explains things to us so that we don't forget.
	8.	My CC lets us know what things are most important.
Clarifying	9.	My CC encourages us to ask questions about things we don't understand.
	10.	My CC asks us questions to see if we understand things.
Reasonable	11.	My CC doesn't expect too much from the training unit.
	12.	My CC is not too easy on us.
Relevant	13.	My CC gives us good reasons for the things we do.
	14.	My CC tells us how the skills we learn at RTC are going to make us better sailors.
Considerate	15.	My CC treats us like human beings.
	16.	My CC lets us know that he has confidence in us.
	17.	My CC is patient with us.
	18.	My CC calls us by our own names.
Human	19.	My CC admits it when he doesn't know something.
	20.	My CC tells us about his experiences in the Navy.
	21.	My CC has a good sense of humor.

Figure A-1. Recruit Survey (Cont'd)

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

Human	22.	My CC takes part of the blame when the training unit does poorly on something.
	23.	My CC really cares about how the training unit does.
Reward and Punishment	24.	My CC gives the right amount of rewards and praise to recruits when they deserve it.
	25.	My CC gives the right amount of discipline to recruits when they deserve it.
Respect for CC	26.	My CC is one of the best at RTC.
	27.	I have great respect for my CC.
Counseling	28.	My CC can be informal with recruits.
	29.	My CC makes every effort to help recruits who are having personal or motivational problems.
	30.	My CC really listens to recruits in order to understand their problems better.
	31.	My CC tells recruits what they can do or where they can go to get help with their problems.
Motivating	32.	My CC looks out for the welfare of the recruits.
	33.	My CC does not harass or belittle recruits.
	34.	My CC treats recruits in a consistent manner.
	35.	My CC is firm in enforcing rules and regulations.
	36.	My CC shows a sincere concern for each recruit in the training unit.
	37.	My CC does not play favorites among recruits.
Instructing	38.	My CC sees to it that individual instruction is given to recruits who need it.
Motivating	39.	The RPO's in my training unit do their jobs well.

Figure A-1. Recruit Survey (Cont'd)

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

Gen. Morale	- 40.	My morale is very high.
Liking for Boot Camp	- 41.	So far, I like boot camp a lot.
Esprit de corps	- 42.	I have great pride in being in the Navy.
Intention to re-enlist	- 43.	I expect that I'll probably re-enlist when my first hitch is up.
Expected Liking of the Navy	- 44.	After boot camp, I expect that I will like the Navy.
	——— 45.	I am encouraged about my chances of getting ahead in the Navy.
Value of Training	- 46.	I think that the training I am receiving at RTC is valuable.
Expected Liking of the Navy	- 47.	I am enthusiastic about the training I will get after RTC.

Figure A-1. Recruit Survey (Cont'd)

NAVTRAEQUIPCEN IH-300

DIVISION OFFICER EVALUATION

The following form contains statements about the Company Commanders in your Division. Answer each statement by making a mark on the NAVTRAEQUIPCEN answer card which you have been given. Mark the card as follows:

A if you strongly agree with the statement.
B if you agree with the statement.
C if you neither agree nor disagree with the statement.
D if you disagree with the statement.
E if you strongly disagree with the statement.

Example: If question #1 said, "Florida is hot in the summer" and you strongly agree with this, you would make a mark in the "A" column after number 1.

	A	B	C	D	E
1.	●	=	=	=	=

Make your marks with a black pencil. Do not put any names on the answer card, but do fill in the Training Unit number of the Company Commander you are rating, and the day of training.

For the final item, #31, mark the form as follows:

A if you think the CC is outstanding.
B if you think the CC is superior.
C if you think the CC is good.
D if you think the CC is average.
E if you think the CC is below average.

I. DIMENSIONS:

A. BEARING	E. COOPERATIVENESS	I. DISCIPLINE
B. RELIABILITY	F. COUNSELING	J. OVERALL QUALITY OF T.U.
C. ADAPTABILITY	G. MANAGEMENT	
D. INITIATIVE	H. PROBLEM SOLVING	K. OVERALL EVALUATION OF CC

Figure A-2. Division Officer Evaluation

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

DIMENSION

C - 1. Adapts to new policies and procedures.

G - 2. Knows who is responsible for each job.

D - 3. Performs his/her job with enthusiasm.

G - 4. Keeps recruits productively busy.

E - 5. Does not resent being told what to do.

I - 6. Division staff does not have to bring order to his/her Training Unit when he/she is not present.

E - 7. Solicits assistance from staff members when needed.

J - 8. Has done well in teaching recruits the knowledge and skills required to be good sailors.

D - 9. Gives 100% effort to his/her job.

F - 10. Makes every effort to counsel individual recruits who are having motivational or personal problems.

A - 11. Reports for duty in appropriate physical and mental condition.

H - 12. Makes efforts to solve problems rather than just grumbling about them.

C - 13. Does not become frustrated in demanding situations.

H - 14. Does not discourage easily when working on problems.

J - 15. Has instilled in recruits the proper attitudes for becoming fleet personnel.

B - 16. Takes action without letting things slip.

B - 17. Makes sure his/her Training Unit is punctual.

I - 18. Does not send recruits to Division staff when he/she could have handled them.

G - 19. Makes the best use of his/her time.

Figure A-2. Division Officer Evaluation (Cont'd)

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

A - 20. Wears uniform properly and is neatly groomed.

G - 21. Sees to it that all forms, records, reports from his/her Training Unit are done properly and on time.

G - 22. Has done an effective job of organizing his/her Training Unit.

C - 23. Adjusts to changes in schedules.

D - 24. Takes appropriate action without having to be told or ordered.

A - 25. Conducts himself/herself in a respectful military fashion.

B - 26. Follows orders promptly and efficiently.

J - 27. His/her training unit appears well trained when you see them on the street.

H - 28. Recognizes the significance of problems.

I - 29. Has not had excessive discipline problems in his/her Training Unit.

E - 30. Willingly helps other staff members.

Key for Item #31

A	B	C	D	E
OUTSTANDING	SUPERIOR	GOOD	AVERAGE	BELOW AVERAGE

K - 31. Overall, I would rate this Company Commander:

Figure A-2. Division Officer Evaluation (Cont'd)

COMPANY COMMANDER SURVEY

The following survey is part of a project which is being conducted jointly by RTC and NAVTRAEQUIPCEN. The project has been names "CETS," for Computerized Evaluation and Training System. The questions on this survey cover several areas: First, there are some personal background questions, then there are attitude questions concerning CC school, RTC, recruits in general, your division, and general job conditions.

The results of this survey will be used along with results of a D. O. Survey and a recruit survey to identify and correct weaknesses in company commanders, CC training, or RTC in general.

The first four questions are background questions. Answer these questions by putting a mark in the box on the NAVTRAEQUIPCEN answer card which corresponds to your answer. For the rest of the items, select a letter according to whether you agree or disagree with the statement.

A if you strongly agree with the statement.
B if you agree with the statement.
C if you neither agree nor disagree with the statement.
D if you disagree with the statement.
E if you strongly disagree with the statement.

Example: If question #12 said, "Florida is hot in the summer" and you strongly agree, you would mark the card in the "A" column after #12.

	A	B	C	D	E
12.	▬	=	=	=	=

In the space at the top of the card marked "Company Number," write the number of your present or most recent Training Unit. In the space marked "Day of Training," please write the date that you are doing this survey.

A. RTC ATTRIBUTES:

1. QUALITY OF CC SCHOOL
2. QUALITY OF RECRUITS
3. QUALITY OF DIVISION SUPPORT
4. VALUE OF TRAINING
5. RESPECT FOR RECRUITS
6. JOB CONDITIONS
7. ATTITUDE TOWARD BEING A CC

Figure A-3. Company Commander Survey

NAVTRAEQUIPCEN IH-300

COMPANY COMMANDER BACKGROUND QUESTIONS

1. How old are you?
   a) 20-25
   b) 25-30
   c) 30-35
   d) 35-40
   e) 40 +

2. How long have you been in the Navy?
   a) 0-5
   b) 5-10
   c) 10-15
   d) 15-20
   e) 20 +

3. What is the largest number of persons you have supervised before becoming a CC?
   a) 0
   b) 1-5
   c) 5-10
   d) 10-20
   e) 20 +

4. Did you volunteer for CC duty? a. yes b. no

For the rest of the questions, select a letter according to whether you agree or disagree with each statement.

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE

Quality of CC School

5. CC school prepared me well in the area of maintaining discipline.
6. CC school prepared me well in the area of counseling recruits.
7. CC school prepared me well in the area of motivating recruits.
8. CC school prepared me well in the area of infantry.
9. CC school prepared me well in the area of barracks.
10. CC school prepared me well in the area of personnel.
11. CC school prepared me well in the area of lockers.
12. CC school prepared me well in the area of academics.
13. _____ CC school prepared me well in the area of RTC policies and procedures.

Figure A-3. Company Commander Survey (Cont'd)

	A STRONGLY AGREE	B AGREE	C NEITHER AGREE NOR DISAGREE	D DISAGREE	E STRONGLY DISAGREE
Value of Training	14. I think that the training recruits receive at RTC will be valuable to them later on in the Navy.				
	15. Because of training recruits, I have developed more confidence and self-respect.				
	16. Being a CC is a job that continually allows me to learn something worthwhile.				
	17. My work as a CC is interesting enough to talk about with people not involved in recruit training.				
Attitude Toward Being a CC (ATBCC)	18. I prefer the work of a CC compared to other jobs.				
	19. I feel that my performance as a CC is an important and vital service to the Navy.				
	20. It is important for me to be an outstanding CC.				
	21. I am proud to wear the red aiguilette.				
Respect for Recruits	22. I have a great respect for my recruits.				
	23. I have a lot of confidence in my recruits.				
Quality of Recruits	24. My recruits are an asset to RTC and the Navy.				
	25. Recruits presently at RTC are easy to teach.				
	26. I get help from Division Staff members whenever I need it.				
Quality of Division Support	27. It is easy to talk with Division Staff members about problems I'm having with my job.				
	28. I have a lot of confidence in the Division Staff.				
	29. The policies of my present Division are fair.				
	30. My supervisor keeps me posted on how well I'm doing.				
Job Conditions	31. I'm satisfied with my chances for advancement at RTC.				
	32. It's not who you know, it's what you do that gets you ahead at RTC.				
	33. Most of the policies and procedures at RTC make good sense.				

Figure A-3. Company Commander Survey (Cont'd)

A	B	C	D	E
STRONGLY AGREE	AGREE	NEITHER AGREE NOT DISAGREE	DISAGREE	STRONGLY DISAGREE

Job Conditions 34. Changing policies and procedures when you change divisions is not a great problem.

ATBCC 35. The rewards for doing a good job at RTC are adequate.

Quality of Division Support 36. I've never felt that my superiors were out to get me.

37. I do not get conflicting instructions on how to perform my job

38. Do you have any particular suggestions concerning any aspect of RTC or any comments concerning the foregoing questions? (Please detail your suggestions and advise why you feel as you do in the space provided below.)

Figure A-3. Company Commander Survey (Cont'd)

RTC SYSTEM DATA

Company Commander: Rank
Rate

Training Unit: Size on formation
Number of recruits added
Number of re-recycled recruits
Number of recruits sent to another T. U.
Number of recruits sent to a special T. U.
Total setbacks at graduation
Size at graduation
Average word knowledge/arithmetic test score
Number of street marks
Number of recruit proficiency badges
MED final barracks average
MED final infantry average
MED final locker average
MED final personnel average

Figure A-4. RTC System Data

APPENDIX B

EXAMPLES OF DATA OUTPUT

INDIVIDUAL DATA

SUMMARY VARIABLE: "RECRUIT SURVEY"
"COMPANY COMMANDER:" BMC xxx

CATEGORY	T.U. xx	DIV. x	ALL E-7's	ALL CC's	T.G. xx
1. CONCRETE	3.911	4.123/ 49%	4.244/ 9%	4.177/ 45%	4.114
2. TIMELY	4.211	4.135/ 50%	4.261/ 41%	4.165/ 50%	4.034
3, CLARIFYING	3.621	3.706/ 50%	3.834/ 23%	3.808/ 46%	3.716
4. REASONABLE	2.992	2.843/ 51%	2.819/ 91%	2.835/ 55%	2.784
5. RELEVANT	3.790	3.841/ 50%	3.893/ 36%	3.828/ 50%	3.761
6. CONSIDERATE	3.280	3.744/ 46%	3.954/ 3%	3.935/ 35%	4.004
7. HUMAN	4.066	3.940/ 51%	4.070/ 50%	4.048/ 50%	4.048
8. GOAL SETTING	3.772	3.914/ 49%	4.074/ 12%	3.995/ 45%	3.827
9. INSTRUCTION	3.863	4.110/ 49%	4.287/ 8%	4.156/ 44%	4.051
10. FEEDBACK	3.184	3.702/ 45%	3.881/ 3%	3.785/ 36%	3.721
11. COUNSELING	3.832	3.775/ 50%	3.828/ 50%	3.853/ 50%	3.851
12. MOTIVATING	3.349	3.649/ 47%	3.778/ 3%	3.750/ 41%	3.679
13. INSTRUCTING	3.538	3.720/ 49%	3.800/ 16%	3.781/ 45%	3.727
14. REWARD & PUN	3.606	3.695/ 50%	3.845/ 23%	3.722/ 48%	3.521

Type 'B' to return to the list of CC's in your division, -CNTRL P- to print this page, or type the number of the category to see the items which make up these scores.

NOTE: For reasons of data security, the data shown are not actual, current data; but are from a developmental test of the system.

Figure B-1. Individual Data

SUMMARY VARIABLE	ALL	DIV A	DIV B	DIV C	DIV D	DIV E
1. CONCRETE	4.051 0.495/ 40.	4.209 0.295/ 6.	3.968 0.760/ 5.	3.844 0.468/ 6.	4.096 0.347/ 7.	4.269 0.235/ 5.
2. TIMELY	4.128 0.406/ 40.	4.210 0.346/ 6.	3.937 0.585/ 5.	3.974 0.242/ 6.	4.108 0.374/ 7.	4.445 0.111/ 5.
3. CLARIFYING	3.614 0.493/ 40.	3.849 0.297/ 6.	3.544 0.651/ 5.	3.348 0.483/ 6.	3.574 0.503/ 7.	3.908 0.143/ 5.
4. REASONABLE	2.894 0.248/ 40.	2.799 0.207/ 6.	2.904 0.241/ 5.	2.968 0.248/ 6.	2.869 0.237/ 7.	3.006 0.363/ 5.
5. RELEVANT	3.664 0.513/ 40.	3.899 0.348/ 6.	3.514 0.740/ 5.	3.432 0.497/ 6.	3.651 0.433/ 7.	4.022 0.121/ 5.
6. CONSIDERATE	3.766 0.510/ 40.	3.864 0.476/ 6.	3.956 0.477/ 5.	3.597 0.474/ 6.	3.615 0.589/ 7.	3.785 0.417/ 5.
7. HUMAN	3.860 0.534/ 40.	4.118 0.297/ 6.	3.705 0.884/ 5.	3.790 0.502/ 6.	3.785 0.383/ 7.	4.011 0.137/ 5.
8. GOAL SETTING	3.964 0.449/ 40.	4.114 0.303/ 6.	3.748 0.645/ 5.	3.738 0.344/ 6.	3.980 0.359/ 7.	4.252 0.163/ 5.
9. INSTRUCTION	3.827 0.485/ 40.	3.953 0.294/ 6.	3.717 0.715/ 5.	3.693 0.418/ 6.	3.817 0.425/ 7.	4.122 0.199/ 5.
10. FEEDBACK	3.659 0.573/ 40.	3.665 0.501/ 6.	3.676 0.730/ 5.	3.412 0.452/ 6.	3.755 0.386/ 7.	4.020 0.283/ 5.

Figure B-2. Grouped CC Data

SUMMARY VARIABLE	ALL	DIV A	DIV B	DIV C	DIV D	DIV E
11. COUNSELING	3.686 0.485/ 40.	3.829 0.277/ 6.	3.666 0.660/ 5.	3.554 0.405/ 6.	3.559 0.470/ 7.	4.006 0.133/ 5.
12. MOTIVATING	3.615 0.354/ 40.	3.678 0.191/ 6.	3.584 0.457/ 5.	3.438 0.325/ 6.	3.611 0.350/ 7.	3.86 0.145/ 5.
13. REWARD & PUNISHMENT	3.522 0.552/ 40.	3.509 0.318/ 6.	3.403 0.616/ 5.	3.427 0.480/ 6.	3.585 0.539/ 7.	3.950 0.204/ 5.

42

NOTE: For reasons of data security, the data shown is not actual, current data; but is from a developmental test of the system.

Figure B-2. Grouped CC Data (Cont'd)

APPENDIX C

EXAMPLES OF TRAINING MATERIALS

BEFORE WE GO ANY FURTHER
LET'S TAKE A QUICK REVIEW
OF JUST WHAT CONCRETE MEANS!

"CONCRETE" MEANS:

A) GETTING INVOLVED WITH THE RECRUITS.
B) NOT GIVING THE RECRUITS MORE THAN THEY CAN HANDLE.
C) BEING SPECIFIC AND USING DEMONSTRATIONS

> C

(PRESS EITHER "A" OR "B" OR "C". THEN PRESS -RETURN-)

BEING CONCRETE MEANS BEING SPECIFIC AND USING DEMONSTRATIONS. AS A COMPANY COMMANDER, IT IS VERY IMPORTANT TO BE CONCRETE WHEN DEALING WITH YOUR RECRUITS. IF YOU ARE, YOU WILL AVOID BEING MISINTERPRETED BY YOUR RECRUITS.

WHICH OF THE FOLLOWING STATEMENTS IS MORE CONCRETE?

A) AN EFFECTIVE CC IS A GOOD LEADER AND A PRIDE TO HIMSELF AND THE NAVY.

B) AN EFFECTIVE CC SETS CLEAR GOALS, GIVES DETAILED INSTRUCTIONS, AND PROVIDES IMMEDIATE FEEDBACK.

> B

(PRESS "A" OR "B" .....THEN -RETURN-)

CORRECT!
THIS STATEMENT IS MORE CONCRETE BECAUSE IT DESCRIBES IN DETAIL SOME OF THE PERFORMANCES OF AN EFFECTIVE CC.

PRESS -RETURN-

CONCRETE IN GOAL SETTING

TO SET GOALS CONCRETELY, YOU NEED TO BE VERY SPECIFIC, THIS MEANS BEING DETAILED. TELL THE T. U. EXACTLY WHAT IT IS YOU EXPECT THEM TO DO.

THE FOLLOWING STATEMENT MADE BY A CC IS AN EXAMPLE OF GOAL SETTING.

IS THIS STATEMENT CONCRETE IN TERMS OF BEING SPECIFIC?

(PRESS "Y" OR "N" AND PRESS -RETURN-)

> N ...ROGERS, AS A STARBOARD LEADING P.O., YOU SHOULD SET A BETTER EXAMPLE FOR THE MEN.

OF COURSE! THE CC DOES NOT DESCRIBE IN DETAIL WHAT A BETTER EXAMPLE IS.

PRESS -RETURN-

CONCRETE IN GOAL SETTING

TO SET GOALS CONCRETELY, YOU NEED TO BE VERY SPECIFIC. THIS MEANS BEING DETAILED. TELL THE T. U. EXACTLY WHAT IT IS YOU EXPECT THEM TO DO.

THE FOLLOWING STATEMENT MADE BY A CC IS AN EXAMPLE OF GOAL SETTING.

IS THIS STATEMENT CONCRETE IN TERMS OF BEING SPECIFIC?

(PRESS "Y" OR "N" AND PRESS -RETURN-)

> Y ...I EXPECT TO SEE OUR 3.2 IN BARRACKS IMPROVED NEXT WEEK!

EXACTLY! THE CC HAS DESCRIBED IN DETAIL HOW THE TRAINING UNIT SHOULD DO ON THEIR BARRACKS INSPECTION.

PRESS -RETURN-

CONCRETE IN GOAL SETTING

TO SET GOALS CONCRETELY, YOU NEED TO BE VERY SPECIFIC. THIS MEANS BEING DETAILED. TELL THE T. U. EXACTLY WHAT IT IS YOU EXPECT THEM TO DO.

THE FOLLOWING STATEMENT MADE BY A CC IS AN EXAMPLE OF GOAL SETTING.

IS THIS STATEMENT CONCRETE IN TERMS OF BEING SPECIFIC?

(PRESS "Y" OR "N" AND PRESS -RETURN-)

> Y ...JOHNSON, TRY TO BRING YOUR ACADEMICS SCORE UP TO THE T.U. AVERAGE THIS WEEK.

CORRECT!
JOHNSON KNOWS EXACTLY WHAT THE CC WANTS.

PRESS -RETURN-

CONCRETE IN GOAL SETTING

TO SET GOALS CONCRETELY, YOU NEED TO BE VERY SPECIFIC. THIS MEANS BEING DETAILED. TELL THE T.U. EXACTLY WHAT IT IS YOU EXPECT THEM TO DO.

THE FOLLOWING STATEMENT MADE BY A CC IS AN EXAMPLE OF GOAL SETTING.

IS THIS STATEMENT CONCRETE IN TERMS OF BEING SPECIFIC?

(PRESS "Y" OR "N" AND PRESS -RETURN-)

> N ...I WANT TO SEE SOME MORE TEAMWORK AROUND HERE!

CORRECT!
THE CC DOES NOT EXPLAIN IN DETAIL WHAT TEAMWORK MEANS.

PRESS -RETURN-

CONCRETE IN GOAL SETTING

TO SET GOALS CONCRETELY, YOU NEED TO BE VERY SPECIFIC. THIS MEANS BEING DETAILED. TELL THE T. U. EXACTLY WHAT IT IS YOU EXPECT THEM TO DO.

THE FOLLOWING STATEMENT MADE BY A CC IS AN EXAMPLE OF GOAL SETTING.

IS THIS STATEMENT CONCRETE IN TERMS OF BEING SPECIFIC?

(PRESS "Y" OR "N" AND PRESS -RETURN-)

> N ...THERE SHOULD BE NO HITS FOR GEAR ADRIFT AT BARRACKS INSPECTION TOMORROW.

INCORRECT!!!
BY SPECIFYING GEAR ADRIFT, THE CC IS POINTING OUT A SPECIFIC OBJECT IN THE INSPECTION.

PRESS -RETURN-

CONGRATULATIONS! YOUR SCORE WAS

5

OUT OF 6 CORRECT. LET'S CONTINUE LEARNING ABOUT CONCRETE.

PRESS -RETURN-